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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,891	04/06/2006	Gen Kumamoto	DK-US030830	3350
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EXAMINER				
JUNG, ALLEN J				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/574,891

**Applicant(s)**

KUMAMOTO, GEN

**Examiner**

ALLEN J. JUNG

**Art Unit**

3628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 April 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 06 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-893)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date 06 April 2006

## **DETAILED ACTION**

### **Status of Claims**

1. This action is in reply to the application filed on April 06, 2006.
2. Claims 1-11 have been amended, in the preliminary amendment filed on April 06, 2006.
3. Claims 12-20 have been added, in the preliminary amendment filed on April 06, 2006.
4. Claim 1-20 are currently pending and have been examined.

### **Information Disclosure Statement**

5. The Information Disclosure Statement filed on April 06, 2006 has been considered. An initialed copy of the Form 1449 is enclosed herewith.

### ***Priority***

6. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. JP 2003-369084, filed on October 29, 2003.

### ***Claim Objections***

7. Claims 1, 9, and 11 are objected to because of the following informalities: When claims 1, 9, and 11 recite the limitation "*maintenance or other action cost data, which is data of a required cost for said maintenance or other action,*" the fact that this limitation is indented makes it appear to belong to the limitation "*third performance data, which is performance data of new equipment,*" while it actually is a separate limitation according to its grammar and context. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites the limitation "*said repair or said maintenance*," and there is insufficient antecedent basis for the limitation "*said repair*." For the purpose of this examination, the Examiner will assume that "*said repair or said maintenance*" is corrected to be "*said maintenance*."

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Examiner's Note:** The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

12. Claims 1-3, 5, 8-12, 15-16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kariyawasam et al (US 6,556,924 B1).

**Claims 1, 9, 10, and 11:**

Kariyawasam, as shown, discloses the following limitations:

- a. *(issuing a prompt to present a computer with equipment data that includes) first estimated performance data, which is performance data of current equipment estimated when a no-maintenance action is carried out in which said current equipment is not maintained or repaired but is left as-is after said current equipment has become obsolete or broken down, or has undergone a periodic inspection, (See at least col2:line62-col3:line5, and Fig 1)*
- b. *(issuing a prompt to present a computer with equipment data that includes) second estimated performance data, which is performance data of said current equipment estimated when maintenance or other action is carried out in which said current equipment is maintained or repaired after said current equipment has become obsolete or broken down, or has undergone a periodic inspection, (See at least Fig 3 and col7:lines13-20)*
- c. *(issuing a prompt to present a computer with equipment data that includes) third performance data, which is performance data of new equipment, (See at least Fig 3 and col7:lines13-30, and Fig 13:item310)*
- d. *(issuing a prompt to present a computer with equipment data that includes) maintenance or other action cost data, which is data of a required cost for said maintenance or other action, (See at least Fig 13)*
- e. *(issuing a prompt to present a computer with equipment data that includes) new-equipment installation cost data, which is data of a required cost for installing said new equipment; (See at least Fig 13:item310 and Fig 21)*
- f. *calculating a first estimated running cost for using said first estimated performance data in said computer, said first estimated running cost being an estimated value of the running cost of said current equipment when said no-maintenance action is carried out; (See at least col5:lines48-67)*

- g. *calculating a second estimated running cost using said second estimated performance data in said computer, said second estimated running cost being an estimated value of the running cost of said current equipment when said maintenance or other action is carried out; (See at least Fig 3 and col7:lines13-20)*
- h. *calculating a third estimated running cost using said third performance data in said computer, said third estimated running cost being an estimated value of the running cost of said new equipment; (See at least Fig 3 and col7:lines13-30)*
- i. *calculating a no-maintenance action total cost estimate at least using said first running cost estimate in said computer, said no-maintenance action total cost estimate being an estimated value of a total cost for a prescribed period of time required when said no-maintenance action is carried out; (See at least col5:lines48-67)*
- j. *calculating a maintenance or other action total cost estimate at least using said second running cost estimate and said maintenance or other action cost data in said computer, said maintenance or other action total cost estimate being an estimated value of a total cost for said prescribed period of time required when said maintenance or other action is carried out; (See at least Fig 3, and col5:lines48-67)*
- k. *calculating a new-equipment installation total cost estimate at least using said third running cost estimate and said new-equipment installation cost data in said computer, said new-equipment installation total cost estimate being an estimated value of the total cost for said prescribed period of time required when said current equipment is discarded after said current equipment has become obsolete or broken down, or undergone said periodic inspection, and said new equipment is installed; (See at least See at least Fig 3, col5:lines48-67 and col7:lines13-30)*
- i. *outputting from said computer said no-maintenance action total cost estimate, said maintenance or other action total cost estimate, and said new-equipment installation total cost estimate. (See at least Fig 19 and col16:line62-col17:line5)*

With regard to the limitations a, f, and i, Kariyawasam, in at least the lines cited, discloses that inspection measurements are received by the system through inputs, and that "the inspection measurements are used to determine the failure rate... output information is prepared at block 26, including preparation of ... expected annual cost for the pipe sections." In addition, Kariyawasam discloses in at least col5:lines48-67 that "calculation of expected annual cost,  $EAC_i(t)$ , is accomplished. This cost is ultimately used as a basis for comparing different repair options... In one embodiment,  $EAC_i(t)$  is the summation of annualized maintenance cost  $AMC_i(t)$ , annualized cost of breakage  $ACB_i(t)$ ,... For the no action case,  $AMC_{no\ action}$  is zero." Therefore, in Kariyawasam's system, calculation of expected annual cost  $EAC_i(t)$  can be implemented in a scenario in which "*no maintenance action*" is taken.

With regard to the limitations b, d, g, and j, Kariyawasam, in at least the figures and the lines cited, discloses that "the user can specify a number of repair scenarios at block 68, each of which is defined by a set of repair options for the pipe-lengths... the expected annual costs are calculated for each repair scenario." In Kariyawasam's disclosure, the data that users are prompted to input are the repair scenarios and the measurement data, and the data that the computer subsequently calculates comprises the performance (failure rate, etc) of the repaired equipments. Thus, such "*performance data of said current equipment estimated when maintenance or other action is carried out...*" in Kariyawasam's system is not exactly an input data, but are intermediate computed data based on the user's initial input. However, it would have been obvious to one of ordinary skill in the art at the time of invention that such intermediate data can be considered as part of input data. One would be motivated to find it obvious because this intermediate data are data that need to be inputted to the next phase of the software application so that the computer could calculate the next result such as the expected annual cost for pipe section.

With regard to the limitations c, e, h, k, Kariyawasam, in at least the figures and the lines cited, discloses that "replacement on a pipe-length basis" is one of the repair options. Such "replacement," as recited throughout Kariyawasam's disclosure, is functionally equivalent to

installing of new equipment. With specific regard to "*new-equipment installation cost data*," Kariyawasam discloses a specific example of "replacement repair cost" in Fig13:item310. In Kariyawasam's disclosure, the data that users are prompted to input are the repair scenarios and the measurement data, and the data that the computer subsequently calculates comprises the performance (failure rate, etc) of the replaced (or repaired) equipments. Thus, such "*performance data of new equipment...*" in Kariyawasam's system is not exactly the input data, but is intermediate computed data based on the user's initial input. However, it would have been obvious to one of ordinary skill in the art at the time of invention that such intermediate data can be considered as part of input data. One would be motivated to find it obvious because this intermediate data are data that need to be inputted to the next phase of the software application so that the computer could calculate the next result such as the expected annual cost for pipe section.

As per claims 9, 10, and 11, these claims encompass substantially the same scope as claim 1. Accordingly, claims 9, 10, and 11 are rejected in substantially the same manner as claim 1, as described above.

**Claim 2:**

Kariyawasam, as shown, discloses the following limitation:

- *a first repair pattern or a first maintenance pattern, and a second repair pattern or a second maintenance pattern are included in said repair or said maintenance. (See at least col7:lines20-30 and Fig 11:item278)*

Kariyawasam, in at least Figure 11 and col7:lines20-30, discloses that there are multiple repair options, such as clamp, auger anode, or structural liner.

**Claims 3 and 12:**

Kariyawasam, as shown, discloses the following limitation:



- *said no-maintenance action total cost estimate, said maintenance or other action total cost estimate, and said new-equipment installation total cost estimate are output to a same sheet or same page in said computer* (See at least Fig 19 and Fig 11)

Kariyawasam, in at least Figure 19, depicts that there are cost results for multiple scenarios displayed together on the same page. The cost for "No Action" scenario, which is functionally equivalent to the *no-maintenance action total cost estimate*, is always shown in the second column. For the *"maintenance or other action total cost estimate"* and *"said new-equipment installation total cost estimate"*, it is not clear from "scenario" columns in Fig 19 as to which columns respond to which. However, through Fig 11, Kariyawasam discloses that the user would have already set the repair options such that one scenario could be a replacement (equivalent to *new equipment*) or some other repair (equivalent to *maintenance or other action*). Hence, as long as Kariyawasam's user set one of the scenarios as the replacement option and one other scenario as some other repair option, the above limitation is clearly taught.

As per claim 12, this claim encompasses substantially the same scope as claim 3. Accordingly, claim 12 is rejected in substantially the same manner as claim 3, as described above.

**Claims 5, 15 and 16:**

Kariyawasam, as shown, discloses the following limitation:

- *calculating a residual life expectancy of said current equipment or said new equipment using said first estimated performance data, said second estimated performance data, and said third performance data, in said computer, said residual life expectancy being further output from said computer.* (See at least col5:lines49-67)

Kariyawasam, in at least the lines cited, discloses that "t" in the cost calculation formula is "the remaining life defined as time to the next maintenance event." Such remaining life teaches the limitation "residual life expectancy." Such "remaining life" expectancy of each pipe-lengths does use data from the initial input data ("*said first estimated performance data... third performance data*") because according to Kariyawasam's disclosure, the data that is being input by the user

includes the identities of the pipe-lengths that are being observed (col3:lines29-35; "input data is provided for each pipe-length in the form of..."). Also, with specific regard to the limitation "*said residual life expectancy being further output from said computer*," Kariyawasam does not explicitly say that the value of "t" is "output" from the computer. However, it would have been obvious to one of ordinary skill in the art at the time of invention that the value of "t" is output, because "t" is a value that is already known and stored in Kariyawasam's system, at least at the point of cost calculations. One would be motivated to output a formula parameter that is already stored and known, for reasons such as confirming the value with the user.

As per claims 15 and 16, these claims encompass substantially the same scope as claim 5. Accordingly, claims 15 and 16 are rejected in substantially the same manner as claim 5, as described above.

**Claims 8 and 19:**

Kariyawasam, as shown, discloses the following limitation:

- *a result of said output is displayed as a graph.* (See at least Fig 20)

13. Claims 4, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kariyawasam et al (US 6,556,924 B1), in view of Bratina et al (US 2004/0091014 A1).

**Claim 4, 13, and 14:**

Kariyawasam, as shown, discloses the following limitation:

- *new-equipment installation total cost estimate is calculated in said computer using said third running cost estimate, [and] said new-equipment installation cost data.* (See at least col16:line62-col17:line5, and Figs 21-22)

Kariyawasam, in at least col16:line62-col17:line5, teaches the calculating of *running cost estimate* for a certain time period. Furthermore, Kariyawasam discloses that "total repair cost amortized..." is included in the system's calculation procedure, and as is replete throughout Kariyawasam's

disclosure (e.g. Fig 11), "replacement" (equivalent to *new equipment installation*) is among the repair option. When the system calculates a total repair cost for this "replacement" option, as Kariyawasam shows in Figs 21-22, construction cost is included, and such construction cost is functionally equivalent to *new equipment installation cost data*.

Kariyawasam does not specifically disclose the following limitation. However, Bratina, as shown, does:

- *said equipment data further includes discard cost data of said current equipment* (See at least ¶0042)

In at least ¶0042, Bratina discloses that "BOF sludge/dust and other iron and volatile metals containing materials are subject to disposal costs when they are discarded to landfills." Here, it is clearly taught that equipments containing "other iron and volatile metals containing materials" are known to incur disposal costs.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Kariyawasam's equipment replacement calculation procedure, with metal/iron disposal costs as taught by Bratina. The claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claims 13 and 14, these claims encompass substantially the same scope as claim 4. Accordingly, claims 13 and 14 are rejected in substantially the same manner as claim 4, as described above.

14. Claims 6, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kariyawasam et al (US 6,556,924 B1), in view of Tsuji et al (US 2003/0065471 A1).

**Claims 6, 17, and 20:**

Kariyawasam discloses the limitations of claim 1, which claim 6 depends upon. Kariyawasam does not specifically disclose the following limitations. However, Tsuji, as shown, does:

- *Calculating a carbon dioxide emission forecast of said current equipment or said new equipment using said first estimated performance data, said second estimated performance data, and said third performance data, in said computer, (See at least ¶0015)*
- *said carbon dioxide emission forecast being further output from said computer. (See at least ¶0015)*

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Kariyawasam's product replacement/repair calculation procedure, with carbon dioxide emission calculation/output procedure as taught by Tsuji. The claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claims 17 and 20, these claims encompass substantially the same scope as claim 6. Accordingly, claims 17 and 20 are rejected in substantially the same manner as claim 6, as described above.

15. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kariyawasam et al (US 6,556,924 B1), in view of Sidikman et al (US 7,110,981).

**Claims 7 and 18:**

Kariyawasam discloses the limitations of claim 1, which claim 7 depends upon. Kariyawasam does not specifically disclose the following limitations. However, Sidikman, as shown, does:

- *a regulatory line is further output from said computer. (See at least col7:lines30-40)*

Sidikman, in at least the lines cited, discloses a procedure of displaying on a screen a message with a disclaimer "in order to ensure compliance with various regulatory requirements." Such procedure of displaying a message for complying with regulatory requirements is functionally equivalent to having "*a regulatory line... further output from said computer.*"

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Kariyawasam's product replacement/repair calculation procedure, with displaying a regulatory message as taught by Sidikman. The claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable.

As per claim 18, this claim encompasses substantially the same scope as claim 7. Accordingly, claim 18 is rejected in substantially the same manner as claim 7, as described above.

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Allen J. Jung** whose telephone number is **571.270.3919**. The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **JOHN W. HAYES** can be reached at **571.272.6708**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair> <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free).

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February 10, 2009

/Allen J Jung/ Examiner, Art Unit 3628

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Supervisory Patent Examiner, Art Unit 3628